INSTALL MANUAL

FOR ON LINE ORDERING- E Commerce Visit Our Website
WWW.PRESSUREGUARD.COM

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PRESSUREGUARD SYSTEM OVERVIEW

WARNING! BEFORE PROCEEDING WITH THE INSTALLATION:

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<th>Wear approved eye and face protection during installation</th>
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<td>Chock tires to prevent the trailer from rolling during installation. Stay clear and release all positive pressure from the air tank</td>
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The PPRESSUREGUARD System routes air from the trailer’s air brake tank through the axle, by the way of tubing, to the hubcaps and then to the tires. The system is designed to maintain tire pressure at a factory pre-set pressure.

If a sudden drop in air pressure occurs (below 70 PSI), the Pressure Protection Valve (PPV) will shut off the Automatic Tire Inflation System (ATIS) to prevent air loss from the air brake tank.

Check valves incorporated in the braided air hoses maintain air pressure in the remaining tires in the event of a tire blowout or air leak.

A trailer mounted warning light will illuminate to alert the driver of a 20 PSI pressure drop depending on system pressure setting.

Aluminum hubcaps on oil applications feature a see-through polycarbonate window for easy checking of the oil level and a fill plug for fluid adjustment.

The trailer’s wheel ends are vented through spindle plugs into the axle and out of the axles, not through the hubcaps.

The hardened rotating shafts, bushings and seals are warranted for 3 years of maintenance free service.

The major components of the system consist of the following components:

- Pressure Protection Valve- PPV
- Pressure regulator and pressure switch
- Spindle plugs with bushings and seals
- Hubcaps with rotating shafts
- Braided stainless steel air hoses
- Pressure relieving axle vent on top of the axle
- Low pressure warning light
- Air-line, fittings, and necessary installation hardware.
Tools and Equipment

The following is a list of tools and equipment needed to install the PRESSUREGUARD System for most applications. To ensure proper installation, contact a PRESSUREGUARD representative to help assist in acquiring the necessary tools. (615-227-6024)

**Part No. 100000**
Drill Fixture
Vise Grip
Chain

**Part No. IK-PR**
Punch

**Part No. IK-K**
Drill Bit

**Part No. IK-PR**

**Part No. IK-T**
Tap
<table>
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<th>Description</th>
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Diagram- Tandem Axle System Layout- 3 holes
Pressure Protective Valve

Step 1- Pressure Protection Valve (PPV)

1-1  Relieve the brake air tank. **This step must be performed before proceeding.**
1-2  Locate and remove the tank accessory plug. If this plug does not exist, move on to step 1-2-1. If this plug does exist, proceed to step 1-3

1-2-1  Remove the existing PPV and replace it with a T-fitting matching the port pipe size. Using thread compound, re-install the existing PPV on one branch of the T-fitting and the provided PPV (1) on the other branch.

1-3  Referencing the accessory plug, locate the proper size Bushing (4) (5) in the kit Using thread compound, screw the Bushing into the tank along with a 1/4" Pipe Nipple (2).
1-4 Screw the PPV (1) into the nipple, taking note of the air flow arrow, on the valve. Turn the relief hole down to prevent moisture from getting into the valve.

1-5 Install the 1/4” Tube x 1/4” NPT fitting (3) to the PPV (1) and attach a length of Air Line Tubing (7) from the output port of the PPV to the input of the Regulator Assembly (6) shut-off valve. Use Cable Ties (10) (14) to secure tubing.
Pressure Regulator Assembly

Step 2- Pressure Regulator Assembly

2-1 To protect the Regulator Assembly (6) from rocks and debris, locate an area near the back of the trailer. PressureGuard recommends the rear cross member facing the rear.

2-2 Using the Regulator Assembly as a template, drill two holes, and mount the assembly.
Wheel End Preparation

Step 3- Wheel Preparation

3-1  Starting with the curb side end of the rear axle, remove the existing hubcap. If working with oil filled hubcaps, properly drain and discard the oil in accordance with the local law and regulations.

3-2  Remove the old hubcap gasket, and clean the hub and axle surface of oil and grease.

3-3  Before proceeding confirm that the spindle Plug Assemblies (13) and Hubcap Assemblies (15), provided in your kit, are the proper size for the axle bore (spindle plugs) and wheel hub (hubcaps) in your application. Also, see that the wheel valve stems are offset 180 degrees from each other.
3-4 Using a 1 1/8" dia. punch and hammer, drive a 1 1/8" dia. hole through the center of the axle Welsh plug. Do not use a drill for this step. The metal filings may damage the wheel bearings. See 'Tool and Equipment' section for Punch End. Remove welsh plug.
Axle Preparation

Step 4- Axle Preparation

4-1  Starting with the rear axle, drill three 11/32” dia. holes in the top (12 o’clock) position of the axle. The horizontal location of the holes is not critical, and depends on convenience and ease of drilling. However, the closer the holes are to the spindle ends, the easier it is to feed the air line through the axle. Do not drill on the center mark of the axle. This mark is needed for axle alignment. See Tool and Equipment section for Axle Drill Fixture.
4-2 Tap each hole using a 1/8” -27 NPT pipe tap. *Use tapping fluid during the drilling and tapping process.*

4-3 Remove the metal filings and debris generated during the drilling and tapping process by using a telescoping magnet through each hole.

4-4 Repeat *steps 4-1* through *4-3* on all remaining axles.
Axle Air Line Installation

Step 5- Axle Air Line Installation

5-1 Starting with the curb side end of the rear axle, feed the Air Line Tubing (7) through the drilled and tapped hole on top of the axle until approx. six inches of tubing extends out of the axle end. If there is difficulty feeding the tubing through the axle you can use a fish tape and pull the tubing from the axle end through the tapped hole. Another option is to insert a metal screw into the end of the tubing, insert the tubing through the hole, and then using a telescoping magnet, grab the screw and pull the tubing through to the axle end.
5-2 To avoid getting debris inside the tubing, cover the end of the tubing with electrical tape before routing through the axle.

5-3 Before proceeding to the next step, determine the mounting location of the Air Line T-Fitting (12). PressureGuard recommends attaching the fitting to the brake hose from the air tank, using two 6” Cable Ties (10).

5-4 Cut the tubing extending out of the top of the axle allowing enough length to reach the T-fitting location, with an additional 14” for suspension travel.

5-5 Slide the Axle Air Line Fitting (9) over the tubing. Apply pipe thread compound and install the fitting into the axle. *Do not tighten the fitting nut at this time.*

5-6 Repeat *steps 5-1 through 5-5* on all remaining wheel ends.
Axle Vent Installation

Step 6 – Axle Vent Installation

6-1  Axle Vents (11) must be installed. They are necessary to relieve pressure created from heat at the wheel end or a system component failure. The PressureGuard system does not vent at the wheel end.

6-2  Apply pipe thread compound to the threads of the axle vent fitting.

6-3  Screw in and tighten the Axle Vent into the remaining (center) hole in the top of the rear axle.

6-4  Find a location as far from the ground as possible and attach the vent to the trailer framework, using the 21” Cable Ties (14), with the vent end facing toward the front of the trailer. Allow 14” of slack in the vent tube to account for suspension travel.

6-5  Repeat steps 6-1 through 6-4 for all remaining axles.
Spindle Plug Installation

Set 7 – Spindle Plug Installation

7-1 Starting with the curb side end of the rear axle, remove the tape, in step 5, from the Air Line Tubing (7) and trim the tubing end with a tubing cutter for a clean and square cut. If a screw was used to help feed the tubing through the axle, cut above the screw and discard.

7-2 Cut and install Chafe Guard (8) onto the entire length of tubing from where it enters the axle to where it attaches to the spindle plug brass fitting.

7-3 Remove the brass nut and nylon sleeve from the spindle plug compression fitting. Slide the nut and nylon insert onto the airline, push the airline firmly onto the spindle plug compression fitting, then hand tighten the compression nut plus one complete wrench turn.
7-4 Rotate the vent holes of the spindle plug to the 12:00 o’clock position and while pulling the tubing out of the top of the axle, insert the spindle plug assembly until the spindle plug shoulder contacts the axle bore.

7-5 Using a Driver and hammer, drive the spindle into the axle bore until the flange of the spindle plug is flush against the end of the axle. Due to the tight fit between the axle spindle bore and the spindle plug shoulder it is critical that the Spindle Plug be driven in straight and square to the axle end. See 'Tool and Equipment' section for Spindle Plug Driver.

7-6 Repeat steps 7-1 through 7-5 on all remaining wheel ends.
Connecting Air Lines to Regulator Assembly

Step 8 – Connecting Air Lines to Regulator Assembly

8-1 Refer to the following page for the ‘Air Flow Hook Up’ diagram.

8-2 Connect the two lengths of airline tubing from the top of the rear axle with an Air Line T-Fitting (12). **To avoid cutting the tubing, do not over tighten the fitting nuts**

![Air Line T-Fitting](image)

8-3 Secure this T-fitting in the location chosen in step 5, with 6” cable ties (10).

8-4 Repeat **steps 8-1** through **8-3** for all remaining axles.

8-5 Connect the air line from each axle T-fitting to the fitting on the exit end of the Regulator Assembly (6). The regulator is marked to show flow direction. **To avoid cutting the airline, do not over tighten the fitting nuts. When cutting this airline to length and securing, keep in mind the 14” additional length required for suspension travel.**

8-6 Secure these air lines using the 6” Cable Ties (10). PressureGuard recommends securing to the brake hoses.
Air Flow Hook – Up

3 Holes Assembly

Air Tank

Pressure Protective Valve (PPV)

Regulator

T-Fitting

T-Fitting

Front Axle

Axle Vent

T-Fitting

Rear Axle

Axle Vent
Hubcap Installation - Rotating Shaft

Step 9 – Hubcap – Rotating shaft Installation

Rotating Shaft Assembly installation is vital to the performance of the PressureGuard system. The main task is to ensure that the Assembly is the correct length for air sealing.

There is a seal inside the air cylinder portion of the Spindle Plug Assembly that is the critical sealing point in the system. When the Rotating Shaft Assembly is mounted to the hubcap then inserted into the air cylinder, it is essential that the steel shaft on the Rotating Shaft Assembly seats within this seal and that the hubcap mounts flush to the hub face.

Refer to the ‘Rotating Shaft Assembly Installation’ illustration on the following page and the instructions below to ensure that all of the following conditions are met:

a) The steel shaft sits within the entirety of the seal – it is long enough to enter the seal and to protrude from the other side.

b) The steel shaft does not “bottom out” or make contact with the end of the air cylinder in the Spindle Plug Assembly.

c) The brass ferrule connecting the green tubing to the metal shaft does not make contact with the bushing.

If all the above conditions are met, you will effectively seal air passing from the axle’s air lines to the hubcaps and subsequently the hoses.
ROTAING SHAFT ASSEMBLY INSTALLATION LAYOUT
9-1 If the Rotating Shaft Assembly (29) is not installed into the Hubcap Assembly (15), do so by screwing the shaft into the threaded hole on the inside of the Hubcap Assembly. If the rotating shaft is provided dis-assembled, cutting it to length is required.

*See 9-1-1 through 9-1-4.*

9-1-1 Screw the provided brass fitting into the hubcap. *Do not over-tighten. PressureGuard recommends finger tight plus two complete wrench turns.*

9-1-2 Insert the green tubing end of the rotating shaft into the fitting and push the steel shaft end through the spindle plug seal. The fitting nut should not be tight for this step.

**Note:** Apply a thin film of axle grease to the rotating shaft for easier insertion.

9-1-3 If required, cut the green tubing until the hubcap contacts the wheel hub, the steel shaft is not contacting the spindle plug bottom and there is a minimum of 1/8” steel shaft remaining to be pushed into seal. A tubing cutter should be used to insure a clean, square cut.

9-1-4 Replace the fitting nut and tighten. *Do not over tighten.*

9-2 Install the provided gasket onto the hubcap.

9-3 Apply a narrow bead of silicone around the circumference (hub side) of the gasket and bolt holes.

9-4 Starting with the curb side end of the rear axle, align the rotating shaft end with the center of the spindle plug and seal. Slowly and carefully push the rotating shaft through the seal until the hubcap contacts the wheel hub.
9-5 Rotate the hubcap so that the mounting holes align and that the hose connections are somewhat aligned with the wheel valve stems. This step is only required for the integral style hubcap. The rotating style hubcap allows you to rotate the hose connections after the hubcap has been bolted to the wheel hub.

9-6 Bolt the hubcap to the wheel hub with the Hubcap Hex Bolts (17). Torque the bolts to 16 ft. lbs. If the wheel hubs are aluminum, coat the bolts with an anti-corrosion compound.

9-7 Repeat steps 9-1 through 9-6 on all remaining wheel ends.
Connecting Air Hoses to the Tires

Step 10 – Connecting Air Hoses to the Tires

10-1 Starting with the curb side end of the rear axle, connect the Inner Air Hose (18) and the Outer Air Hose (19) to the hubcap, by hand tightening to the hose connections. **Do not use a wrench to tighten these nuts. Over tightening will damage the O-ring seal and the connection will leak.**

10-2 Connect the Inner Air Hose 18 to the inner wheel valve stem. Connect the Outer Air Hose (19) to the outer wheel valve stem. **As in 10-1, hand tighten only.** See the 'Tandem Axle System Layout.

10-3 Repeat **steps 10-1 and 10-2** for all remaining wheel ends.
Low Pressure Warning Light Installation

Step 11 – Low Pressure Warning Light Installation

11-1 Locate an area on the front panel of the trailer approximately 30 inches above the bottom of the coupler, and as close to the roadside corner as possible, to mount the Warning Light (26). The driver should have a clear view of the warning light from the roadside rear-view mirror.

11-2 Using the Warning Light Bracket (23) as a template, drill two mounting holes, and mount the bracket using the provided Self-Tapping Screws (24).

11-3 Assemble the Warning Light (26) and Warning Light Bracket (23).

11-4 Connect the two wires of the Warning Light Wiring (22) to the two electrical connectors of the pressure switch located at the Regulator Assembly (6), using Electrical Connectors (20) of provided wiring harness.
11-5 Route Warning Light Wiring (22) from the pressure switch, along the trailer frame, securing it to the frame or existing wire, ending in the trailer seven-way junction box.

**Notes:**

1. If the trailer is equipped with a sliding subframe, provide enough slack in the wire to allow for suspension movement. The slack existing in the brake lines can be used as a guide.
2. The light requires a power source that will provide a constant 12 volts. Ex. the blue pin (auxiliary).
3. If there is no junction box, connect to the seven-way plug for a power source.

11-6 Connect a length of wiring to the two Warning Light Pigtails, using Electrical Connectors (20) & (21), and route this wiring into the trailer seven-way junction box, securing it to the trailer wall with Warning Light Wire Clamps (27) and wire ties.

If power source is ABS see pictures below:
11-7 Inside the junction box, the black wire from the pressure switch connects to the 12V power source. The white wire from the Warning Light connects to the white pin (ground). The white wire from the pressure switch connects to the black wire from the Warning Light. See 'Electrical Schematic.'

11-8 Place the PressureGuard Warning Light Decal (28) on the trailer, just above the warning light.
Pressurize System and Check for Air Leaks

Step 12 – Pressurize System and Check for Air Leaks

12-1  Connect an air supply to the trailer and pressurize the brake air tank.

12-2  After the air tank is pressurized, open the PressureGuard air system valve, included in the Regulator Assembly (6).

12-3  Starting with the rear axle, soap check all the system fittings from the air tank to the axle for air leaks. Also check the axle vents for leaking air. Air venting from the axle vent is an indication of an air leak inside the axle, between the hubcap and where the airline tubing enters the axle. If a leak is discovered, shut off the supply to the air tank and completely depressurize the system before repairing the leak.

12-4  Soap check all hoses connections from hubcap to valve stem.

12-5  Repeat steps 12-1 through 12-4 for all remaining axles.
System Troubleshooting Guide

Air leaks at system fittings. See Pressurize System and Check for Air leaks section (Step 12) of this manual.

Problem: 1. Fitting nut not tight
2. Tubing cut by fitting nut
3. Tubing not pushed into fitting far enough.

Solution: 1. Tighten nut (do not over tighten)
2. Remove tubing from fitting and cut off just above leaking cut. Re-insert tubing into fitting.
3. Loosen fitting nut and push tubing further into fitting then retighten nut.

Brake air tank de-pressurized or low pressure.

Problem: 1. Not using PressureGuard provided pressure protect valve.
2. Pressure protection valve.
3. Leaking pipe connection between air tank and pressure protection valve.

Solution: 1. Replace with PressureGuard pressure protection valve.
2. Replace with new PressureGuard pressure protection valve.
3. Dis-assemble connection, apply pipe sealant and re-assemble.

Tire/System Pressure reading low/high.

Problem: 1. Defective gauge. Low/high pressure.
2. Regulator setting set low/high.
3. Regulator leaking. Low pressure.
4. Pressure protect valve installed backwards. Check that flow arrow pointing in direction of air flow. See 'Pressure Protection Valve' section (Step 1) of this manual. No pressure.
5. System air leaks. Low pressure.
7. Low air tank pressure. Low pressure.
**Solution:**

1. Check for system leaks before and after regulator, including the tires. See Pressurize System and Check for Air Leaks' section *(Step 12)* of this manual. If no leaks, try adjusting pressure setting with knob on top of regulator. If setting can be re-set and holds, move to Step 2.

2. Reset regulator setting to required pressure. Using a good quality digital tire gauge check pressure at tank valve located adjacent to the regulator. Pull up on the regulator knob and turn counter-clockwise until system pressure is at least 20 psi less than desired system pressure. While pulling up on regulator knob, slowly turn knob clockwise until desired system pressure is achieved. If pressure reading is greater than desired system pressure repeat Step 2.

3. If no system leaks are found and regulator cannot be reset. Replace with PressureGuard recommended regulator.

4. Remove pressure protection valve and re-mount with flow arrow pointing in direction of flow.

5. See 'Pressurize System and Check for Air Leaks' section *(Step 12)* of this manual and repair leaks as required.

6. Remove PressureGuard braided hoses from tire valve stems and check tires for leaks.

7. Find air isolation valve located at regulator and close it. Check accumulator tank pressure and if required increase pressure. Then re-open valve.

---

**No air flow through regulator.**

**Problem:**

1. Air isolation valve, located at regulator, is closed.

2. Pressure protect valve installed backwards. Check flow arrow pointing in direction of air flow. See 'Pressure Protection Valve' section *(Step 1)* of this manual.

3. Regulator leaking.

4. System air leaks up stream of regulator.

**Solution:**

1. Open air isolation valve.

2. Remove pressure protection valve and re-mount with flow arrow pointing in direction of flow.

3. Replace with PressureGuard recommended regulator.

4. See 'Pressurize System and Check for Air Leaks' section *(Step 12)* of this manual and repair leaks as required.
Air leaking from axle vent.

**Problem:**
1. Air leak inside the axle.
2. Air leak inside the hubcap.

**Solution:**
1. Air leaking where airline tubing connects to spindle plug inside the axle. Fitting nut could be loose or the tubing may have not been pushed into fitting far enough. Also, the fitting nut could be too tight and the tubing is cut.
2. Air leaking from the fitting where the rotating shaft connects to the hubcap. Air leaking around rotating shaft seal inside the spindle plug.

Hose leaking at valve stem or hubcap connection.

**Problem:**
1. Hose fittings need to be tightened.
2. Hose fitting too tight.

**Solution:**
2. Fitting o-rings could have been damaged. Replace o-rings/hose.

Water in hubcap.

**Problem:**
1. Hubcap oil plug loose.
2. Hubcap oil plug damaged.
3. Hubcap gasket missing.
4. Hubcap gasket damaged.
5. Condensation.
6. Axle vent mounted to close to road surface.
7. Axle airline fittings loose or not sealed.
8. Axle vent fitting loose or not sealed

**Solution:**
1. Push plug into hubcap.
2. Replaced with PressureGuard recommended oil plug.
3. Add PressureGuard recommended gasket.
4. Replace with PressureGuard recommended gasket.
5. Check for system air leaks. See 'Pressurize System and Check for Air Leaks' section *Step 12* of this manual and repair leaks as required.

6. Re-mount axle vent. See 'Axle Vent Installation' section *(step 6)* of this manual.

7. Remove fittings, apply pipe thread compound, and re-install.

8. Remove axle vent, apply pipe thread compound to the fitting, and re-install.

**Tire Pressure Low or Flat.**

**Problem:**
1. System air leaks. Low pressure.
2. Hole in braided hose. Flat tire.
3. Hole in tire. Flat tire.

**Solution:**
1. See 'Pressurize System and Check for Air Leaks' section *(Step 12)* of this manual and repair leaks as required.
2. Replace with PressureGuard recommended hose.
3. Repair tire

**Warning Light on**

**Problem:**
1. System air pressure low below 80 or 100 PSI. Per Pressure Switch setting.

**Solution:**
1. Check for system air leaks.

   See 'Pressurize System and Check for Air Leaks' section *(Step 12)* of this manual and fix leaks as required.

   Check brake air tank pressure. Pressurize to required pressure.

**Warning light does not come on when system pressure is low.**

**Problem:**
1. Pressure switch is defective.
2. Pressure switch improperly sized.

**Solution:**
1. Replace with PressureGuard Recommended Pressure Switch.
2. Replace with PressureGuard Recommended Pressure Switch.